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WHY DO ANIMALS FIGHT?

WALLACE CRAIG.

THE fact that all animals fight has attained immense importance in our day, because it is used as an argument in favor of the doctrine that men also should fight one another, that warfare ought not to be abolished. This doctrine I shall speak of for convenience as militarism; which is far preferable to calling it Nietzscheism or Treitschkeism or Prussianism, for all such names are invidious and more or less unjust. Militarists are at work in every nation, and in every nation they emphasize what they call the "biological" argument for war. They paint lurid pictures of "nature red in tooth and claw," dwelling on the many instances of rapacity, cruelty and destruction which undoubtedly occur in nature. They claim that theirs is a true picture of the life of animals, and also of the natural life of man. Their argument looks plausible, and it furnishes entertaining reading for the populace. But I believe it to be fallacious, partly because it exaggerates the cruel facts in nature, but far more because it misinterprets their meaning.

The attempts to refute the biological argument for war, so far as I have seen them, have been inadequate, some of them even absurd. Some pacifists have claimed that "No animal fights its own kind." Now, if the word pacifist means a person who longs to see war abolished, and who is willing to labor to the very best of his ability toward that end, I am myself a pacifist. But I believe that the cause of truth is more fundamental than the cause of any one man's theory as to how to make peace. Let us tell the truth, regardless of consequences. And the essential truth in this matter is that every animal fights its own kind. If we wish to discover any biological support for a policy of pacification, we must not seek to do it by asking "Do animals fight?" That question is not worth investigation, because the answer is already known. We must change the question and ask "Why do animals fight?"

The militarists are ready with an answer. They claim that the means by which a race progresses, or even maintains its present standard, is the killing of the less fit in the struggle for existence. And if the struggle to the death should cease, the race would degenerate. This presupposes the truth of the theory of the all-sufficiency of natural selection. Now, I shall not allow myself to be drawn into the debate between the rival theorists in genetics. I favor no one proposed solution of the problem of heredity and the method of evolution. On the contrary, I emphasize that this problem is not solved and that, therefore, the militarist has no right to base an argument for war upon one particular theory as to the origin of species. Our knowledge of genetics is not sufficient, and we doubt whether it ever will be sufficient, taken by itself, to settle the debate either for or against the biological argument for war. The pacifist is right in saying that the argument for war is "not proven," but he cannot say that it is positively disproved, by what we know as to the method of evolution. To find the evidence on which to base a positive verdict, we must turn away from the theories of evolution—which are all highly speculative—and examine at first hand the facts as to fighting among animals.

To understand why an animal fights, we must watch its fighting behavior, and also study the relation of its fighting to its other behavior, to its life history—in short, to its whole economy. This cannot be done by the old-fashioned method of surveying the entire animal kingdom, collecting therefrom a mixture of fragmentary and miscellaneous information. On the contrary, our problem can best be attacked by an intensive study of one species, or one group of related species. And if it can be shown that even one flourishing group of animals has evolved into its present prosperous state without its members engaging in internecine strife, that is enough to prove that warfare is not necessary for evolution.

My own specialty, as a student of behavior, is the Columbidæ, and I shall use pigeons as my chief examples. But I have studied other birds and mammals sufficiently to be sure that the statements made in this paper have a wide and general application among them. The birds and mammals are the most important animals for our problem. And the pigeons are a properly representative group: because, first, their behavior is typical; they quarrel and fight just about as much, or as little, as do the majority of birds. A healthy pigeon never allows another to trespass on his territory, or in any way interfere with his interests, with impunity. And, secondly, the pigeons are a "dominant" group; that is to say, the pigeon family is found all over the world, it has evolved into a large number of species, and the number of its individual members is enormous. All signs indicate that the pigeon family is in the most flourishing condition and in a state of rapid, progressive evolution. If the members of such a group live and act in a manner contradictory to the militarist theory, this is sufficient to prove that the militarist policy is not necessary for the welfare or the evolution of a race.

A friendly critic has asked me whether the generalizations presented in this article are true of carnivores such as the lion. In reply I would say that I believe they are. The published accounts of leonine behavior, so far as I have read them, indicate that our knowledge of the lion is fragmentary and incomplete. But the lion is only a large cat. Feline behavior is best known in the common cat. All the generalizations set forth in the present article are true of cats. Some of them are less true of cats than of pigeons, but, on the other hand, some of them are more true of cats than of pigeons. For example, the felines "space out" much-farther than pigeons do, and consequently come less into conflict with each other. The terrible powers of the carnivores are exercised chiefly upon their prey, not upon their own kind. I never knew of a cat being killed by another cat in a fight. And our problem concerns only fighting between animals of the same species

With reference especially to the higher vertebrates, we shall maintain and defend the two following theses: I. Fundamentally, among animals, fighting is not sought nor valued for its own sake; it is resorted to rather as an unwelcome necessity, a means of defending the agent's[1] interests. II. Even when an animal does fight, he aims, not to destroy the enemy,[1] but only to get rid of his presence and his interference.

I. The animal fights in order to gain or to retain possession of that which is of value to him, such as food, mate or nest. With animals, as with men, the cause of a quarrel is very commonly a coveted territory. My dog drives away other dogs from my house and yard. In general, each agent drives away other animals from his own nesting place, his chosen place for sleeping at night, his place for basking in the sun, or other territory which he can appropriate and use. Two animals fight only when their interests conflict. This is the fundamental fact in regard to infra-human fighting.

Animals do not enjoy fighting for its own sake. Unless his anger is aroused, the agent's behavior indicates that he has no appetence[2] for the fighting situation; he does not seek it; when in it he does not endeavor to prolong it; and he reveals by his expressions that he does not enjoy it. On the contrary, fighting belongs under the class of negative reactions or aversions;[2] it is a means of getting rid of an annoying stimulus. As McDougall says, the stimulus of the instinct of pugnacity is the thwarting of some other instinct. If the animal's instincts are not thwarted, if annoying stimuli do not thrust themselves upon him, he will never fight. He fights only when he is attacked, or threatened, or his interests are interfered with. He does not go in active search of a fight, except in play, in which no injury is done to either side. Of course it is true that when necessity compels him to fight, he shows eagerness to attack, and joy when he achieves the victory; these are necessary in order that he may be a good defender of his rights. But when we try the experiment of keeping a bird in such a peaceful environment that he never tastes the joys of battle (except in harmless play), he shows no sense of loss, but is manifestly happier than the birds that fight. The pigeon, unless his temper is aroused, has no appetence for a battle. He has appetence for a great many other objects; as, water, food, mate, nest: if kept without such appeted objects he shows distress, tries to get out of his cage, and in every way makes clear to us that he is seeking the appeted object. But when he is kept without enemies, he never manifests the least appetence for them. This is true of all birds and mammals, so far as I know them. I am sure that it is true of the common fowl, although the cock is one of the most celebrated of fighters. It is a popular error to suppose that a bird such as the game cock, which shows unyielding bravery when in a fight, must necessarily be an aggressive bird, seeking the joy of battle for its own sake. The fact is that in the poultry yard the game cock is not a quarrelsome bird; if neighboring cocks do not unwarrantably thrust their presence upon him he lets them alone and attends to his own affairs.

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[1] We shall use the term "agent" for the animal whose behavior we are studying. His opponent we shall speak of as the "reagent" or the "enemy." The word enemy is thus used, as it is used by writers on the science of war, in a non-invidious sense.

[2] Craig. Appetites and Aversions as Constituents of Instincts. *Biol. Bull.*, 1918, Volume 34.

At this point the question naturally arises, Why do animals fight so much as they do? For it is undeniable that under certain conditions there is a very great amount of fighting among them. In seeking an answer to this question it is important to notice the circumstances under which the excessive amount of fighting takes place. One of these circumstances is that of caged animals which are crowded so closely together that they constantly fall afoul of one another. Pigeons, if thus crowded in quarters that are too small for them, fight to a degree that is cruel and distressing. Since each pair of birds insistently drive trespassers away from their nest and from a certain territory around their nest, if the pigeon-keeper crowds the nest-boxes too closely together constant fighting must inevitably result. Such a state of affairs is not natural. It does not exist in any species in a state of nature. And it has given to some theorists an exaggerated notion as to the frequency of fighting among animals. In a great many wild species the amount of fighting is, I am sure, extremely slight.

Indeed, anyone who has watched wild animals with a philosophical eye must have been struck by the beauty and delicacy of the adjustments through which they avoid collisions with their fellows. Thus, in a flock of flying geese each goose maintains with astonishing precision the standard distance between himself and the goose ahead of him. When a great number of robins are searching for worms on a large lawn, each keeps with a pretty faithful constancy a distance of two or more yards between himself and any other robin. This tendency to "keep one's distance" is so widespread among animals and so various in its manifestations that it constitutes a study in itself. It is known to naturalists as "spacing out." Birds "space out" their nests with similar regularity, the distance varying with the species. The bank swallow burrows within a foot or two from the burrow of his neighbor; the kingfisher prefers a distance which I should estimate at about a half-mile. The interesting fact about these myriad cases of spacing-out is that nearly all of them (of course, not quite all) are adjusted without fighting. Evidence indicates that in a vast number of cases the animal seeking a nesting-place, and finding one that is already occupied, peacefully passes on and looks elsewhere. These quiet cases of adjustment are likely to be overlooked by the observer; the cases of fighting are conspicuous and thus seem to be a greater proportion than they really are.

Notwithstanding all these facts, there remain cases in which two animals, even among those that are in a free and natural state, may be observed to quarrel and fight throughout a whole day, and to renew the quarrel when they wake the next morning. The reason for such excessive fighting may be stated briefly as follows:

The adjustment of conflicting interests requires intelligent co-operation and some degree of social organization. Most animals, because of the low state of their intelligence and of their social organization, have a narrowly limited power of co-operating. That is why their differences must be settled so often by fighting. The following illustration, though simple, shows the point clearly. If we set up a new pigeon cote containing several compartments, each with its own door, and allow the pigeons to choose compartments for themselves, it may happen that two males will choose different doors from the very first, in which case they may live side by side in peace. But it may happen that on trying the new dove cote both males become enamored of the same door and each tries to enter it and make it his own. If these birds were endowed with reason, one of them would address the other in this wise: "Friend, in this dove cote there is plenty of room for you and me and for our families. Let us agree that you shall use the right door and I the left." But since pigeons are not endowed with reason they cannot make such a conceptual agreement; if both birds have chosen the same door they can adjust the difficulty only by fighting for it. In short, the reason why animals fight is that they are too stupid to make peace.

That this is the true explanation is indicated by the fact that if we lend the birds our reasoning power, if we act as arbitrator and settle their disputes for them, they gladly accept our adjustments and live in peace. Thus, in the case of the two pigeons fighting for possession of the same compartment in the dove cote, if I take one of the birds and keep him in a different compartment until it becomes "home" to him, then I can let him out, he will return to his new home and leave his neighbor at peace in the one which he had first chosen. This is an illustration of what we said before (p. 268), that if a man who keeps a flock of birds acts as a "benevolent despot" among them, administering justice and successfully resolving all conflicts of interest, the birds under his rule show no desire to fight, and are happier than those that do fight.

The amount of quarreling among animals varies (other conditions being equal) with the degree of their stupidity. Some individual pigeons are much more quarrelsome than others. The truculence of some individuals is due to the fact that they were reared under unnatural conditions which kept them in constant brawls. If as adults they are allowed to live a free, normal life, they outgrow their excessive quarrelsomeness. As their experience increases they tend more and more to adjust their differences with their neighbors without fighting. This fact is of great importance for our problem; because it proves that as viewed by the birds themselves fighting is not a good, it is a necessary evil.

The law that aggressiveness does not pay is conspicuously true among animals. The contentious pigeon, as every fancier can testify, brings disaster not only to his neighbors but also to his own cherished home and family. Hence it is not surprising that in the course of evolution the birds have become as gentle and peaceful as we know them to be, and that even the individual bird strives, with his limited intelligence, to adjust the difficulties that arise between himself and his neighbors and to avoid actual fighting.

II. These last observations naturally lead up to our second thesis, which is, that even when an animal does fight he aims, not to destroy the enemy, but only to get rid of his presence and his interference. This point is important, for if the militarist theory were correct, that the function of fighting in the economy of nature is the elimination of the "weaker" individuals or groups, then we ought to find that the behavior of the fighting animal is directed toward the extinction of the enemy's line of descent, as, by the destruction of the reagent himself and also his eggs and young. But the behavior of animals does not conform to this theory. Especially among the higher vertebrates, observation shows that they do not follow the militarist policy, and without it they live and thrive and progress.

The only animals which in any degree follow the militarist policy are, I believe, those of parasitic habit. Some of the ants, bees and wasps have become "robbers," systematically destroying their congeners, even those of their own species, in order to appropriate their stores of larval food. It is a sad and discouraging fact that wherever in the animal kingdom some members have developed sociality and co-operation and thrift, their very prosperity has furnished opportunity for the breeding of a race of despicable parasites. But there is a grain of consolation in the fact which has long been known and has recently been emphasized by Professor Wheeler,[3] that the parasitic habit leads, in the course of time, to the destruction of the parasite itself. A specialist on the hymenoptera could probably write a positive refutation of the militarist theory, by showing that those animals which do follow a militarist policy thereby lead to their own extinction.

But I am not a specialist on insects. Among the higher vertebrates, parasitic behavior is found only in rare cases, as in that of the European Cuckoo. We are told that the young cuckoo works systematically to push its nest-mates out of the nest and thus destroy them. Such a systematic attempt to destroy its rivals is, I am sure, not to be found in any non-parasitic species. The young cuckoo exhibits the behavior that would be found in other animals if they followed a militarist policy, and makes clear to us by contrast that they do not follow a militarist policy. The non-parasitic bird or mammal aims, as we said before, not to destroy his rival, but only to free himself from his presence and his interference.

To prove this thesis we shall present an analysis of the animal's fighting behavior. We shall inquire especially as to the behavior of that individual animal who is the better fighter of the two in the contest, the one destined to be the winner if the battle be fought out. With such an individual as agent, the reagent may do one of three things: namely, (a) flee; (b) submit; (c) persist in fighting. We shall describe the behavior of the agent in these three cases.

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[3] Wheeler, W. M. The Parasitic Aculeata, a study in evolution. *Proc. Amer. Philos. Soc.*, 1919, Volume 58.

(a) If the reagent flees, the agent does not pursue him indefinitely and seek to destroy him. On the contrary, he pursues him only far enough to eliminate him from the field of interest about which the battle is being fought. Thus, when a dog has driven an intruding dog out of the territory over which he claims sovereignty, he does not pursue him farther (unless there be some other cause for the pursuit), but by barking and other expressions of triumph and satisfaction he shows that his end has been fully accomplished. So it is with all animals that I have ever observed driving others away from their territory or their mates or their food. That is all that the agent cares to accomplish. He shows no tendency to pursue the enemy to the death.

That this generalization is true and fundamentally important is evidenced by the fact that in many groups of animals, indeed in probably all animals in some degree, there has been an evolutionary change from destructive forms of fighting to forms of fighting which are merely expressive or ceremonial, which drive away the reagent by threatening or warning him without doing him any injury. This is a part of what Hocking[4] has named "the dialectic of pugnacity." The pigeon warns his enemy by a display which is highly ceremonious, consisting of elaborate cooing and gesturing. The celebrated mock-battles of the capercaillie and of a great many other birds furnish other instances of the same trend in evolution. All birds and all mammals are endowed with instincts to threaten the enemy, to make feints, to hiss or growl or roar, or to vent their anger in other expressions which serve to warn the reagent and often cause him to flee without a blow being struck. It is important to notice that these attempts to drive away the enemy are used first, before the physical combat. If the aim were to destroy the enemy he would be attacked silently and by stealth: but in most species he is not so attacked; he is first warned, and given every opportunity to withdraw from the field. In a great majority of the conflicts among animals, the ceremonial combat is all that is needed and all that is used: the reagent may withdraw as soon as he is threatened; or he may at first make a counter-display, but withdraw on discovering that the agent is more determined than he. The physical combat is resorted to only after the ceremonial has been tried and has failed to settle the dispute.

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[4] Hocking, W. E. *Human Nature and Its Remaking.* New Haven, 1918. Chapter XXIV.

(b) If the enemy submits, the agent ceases fighting. In pigeons this is witnessed again and again. In the heat of battle the agent may rush upon his enemy, jump on his back, peck him with all his might, and pull out his feathers. But if the reagent lies down unresisting, the agent's blows quickly diminish into gentle taps, he jumps off his prostrate foe, walks away, and does not again attack the enemy so long as he is quiet. This behavior is typical, and it proves that the pigeon is devoid of any tendency to destroy his rival.

Further study of this behavior indicates that it is not merely negative, not merely the absence of an impulse to destroy. The bird has a positive impulse to quit fighting a non-resisting bird of his kind. One explanation of this impulse is to be found in the mode of instinctive sex recognition. When a male meets a stranger belonging to his own species, provided this male has not learned by experience to discriminate the sexes, the only discrimination he shows is this: if the stranger fights, the agent treats it as a male; if the stranger refuses to fight, the agent treats it as a female; if the stranger first fights, then submits, the agent treats it first as a male, then as a female. This mode of sex recognition is so widespread in the animal kingdom that it seems to be fundamentally ingrained in the nature of the male. Audubon tells us that when he watched a battle between two wild turkeys, when one of them had been defeated, he was surprised to see that the victor, instead of injuring him, showed toward him the amorous behavior which is generally accorded to a female. Audubon need not have been surprised. Behavior of this sort is now known to be characteristic of a great many animals ranging all the way from the lower invertebrates to the Primates. Thus we see that in the male animal there is a fundamental trait which tends to prevent him, and in most cases does prevent him, from doing any injury to a non-resisting member of his species.

We showed under (a) that the enemy who flees is not pursued to the death. We have now shown under (b) that the enemy who submits commonly finds his life spared. The non-destruction of the enemy is more certain under (a) than under (b). An enemy who has fled from the field of operations is perfectly safe. It is but natural that an enemy who has submitted is not perfectly safe; the pugnacity may smolder, and may break out again into violent fighting. The facts are too complex to be treated in this short article. Suffice it to say that in those rare cases in which an animal, or a group of animals, kills a non-resisting member of the same species, such killing is in various ways exceptional or accidental;[5] it is not a policy, not a common and regular form of behavior, and very far from being a systematic pursuit.

(c) When the reagent refuses to flee and refuses to submit, the agent is obliged to resort to physical force. It is extremely interesting to notice that even in this case the physical force used is often of a form which serves merely to rid the agent of his enemy without doing him any hurt. Thus, when the common pigeon quarrels with his neighbors on one of the high ledges on which they like to perch, his principal method of dealing with his opponent is to seize him by the nape of the neck, drag him to the edge of the ledge, and hurl him off into space. The bird that is thus hurled off spreads his wings and flies without injury.

From what has been said thus far, it is clear that when a pigeon deals with a rival pigeon, his behavior is directed first toward inducing the reagent to flee voluntarily, then toward forcing him off the field. Only when these means have failed, when the reagent refuses to flee, refuses to submit, and is too powerful to be hurled off the ledge, only then does the agent endeavor to the utmost to injure his opponent. Then the two pigeons meet in a grim, silent, unrelenting, physical struggle. This brutally physical struggle appears in extreme contrast to the more common pigeon fights, which are highly ceremonious. Yet even these fiercest struggles, unless they are protracted for a very long time, do not result in the death of either combatant. And at any time when either combatant feels that he has had "enough," he needs only to leave the field in possession of the victor; he thereby saves himself from further injury. For even after the most prolonged and painful battle it still remains true that if the enemy flees or submits the agent ceases fighting.

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[5] See, *e. g.*, W. H. Hudson. *The Naturalist in La Plata.* London, 1892. Chapter XXII.

In conclusion, we can give only a few brief statements as to the bearing of the facts of animal behavior upon human problems and upon philosophy.

1. No bird or mammal follows a policy of non-resistance. And we find no trend of evolution toward a policy of absolute non-resistance. Even in the peaceful settlement of disputes each animal asserts his rights by expressing his determination, and often by making feints or threats. Further, each individual and each social group is prepared to resort to force, and to exert force to the utmost, if necessary, in order to defend its interests. Defensive fighting pays.

2. On the other hand, aggressive fighting does not pay. Among animals, as among men, fighting is a wasteful and harmful means toward the attainment of the ends sought by the contestants. In adaptation to this fact, we find that both in the history of the race and in that of the individual there is a trend away from destructive forms of fighting, toward the adjustment of disputes by harmless means. Progress in this direction involves the development of intelligence, of self-control, and of a technique for the adjustment of difficulties. Such progress has been made by all the higher animals, in varying degree. Birds and mammals strive to control their angry impulses. They

cope with the problem of pacification, for their interests depend upon it. We human beings, when we strive toward world peace, are only travelling farther in the same line of progress in which our infra-human ancestors took the first steps. Whether we shall ever achieve world peace, I do not predict; because I do not know whether we can ever develop our understanding, our self-mastery and our political technique to a degree of perfection sufficient to cope with the immense difficulties of world organization.

3. The third conclusion, which we shall present here chiefly as a criticism of militarism, is, in its broader aspects, a criticism of the whole "biological"[6] philosophy of certain schools of current thought. This conclusion is that a distinctively "biological" need for fighting does not exist. The reasons why animals fight are substantially identical with the reasons why men fight. These reasons all pertain to the subject matter of our first two conclusions, and they may be summed up in one sentence. Animals and men fight because they must conserve their interests, and their technique for the adjustment of conflicting interests is too imperfect to adjust all cases of conflict. This, we believe, is the only true argument for war. The militarist denies that this is the whole argument. He says that if we ever should achieve a world organization which would adjust all conflicts peaceably and abolish war, the race would degenerate, because war is a "biological" necessity. His "biological" argument takes two forms; viz., (a) the definite; (b) the indefinite.

(a) The definite "biological" argument is based upon the theory of the all-sufficiency of natural selection. In reply to this argument, I do not need to offer any opinion as to the method of evolution. All I need to say is that, whatever the method of evolution may be, it cannot be in contradiction with the facts of animal behavior. And the facts of animal behavior prove that fighting to the death is not necessary for the welfare or for the evolution of a race.

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[6] This word is put in quotation marks to make clear that our criticism is aimed, not at biology proper, but at the misuse of biological theory by certain philosophers and writers on human affairs.

(b) The indefinite form of the argument pictures a mysterious, irresistible "biological" necessity or "destiny," which threateningly overhangs our human efforts and will cause the extinction, or at least the degeneration, of any people that lives up to its humanitarian ideals. In answer to this, I have given evidence to prove that the animals also are humanitarians. The higher animals strive to avoid destructive fighting, and some large and important groups of species have so far achieved this result that they have reduced fatalities to a negligible quantity. These great groups of animals have been evolving their pacific régime, and thriving under it, for millions of years, and are today in a state of progressive evolution, the very opposite of degeneration. Therefore, we may brand as false and contrary to the evidence of facts, the militarist statement that degeneration threatens to overtake us if we should put into practise our humanitarian ideals.

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